

CLAIMS

1. A wireless communication system comprising a base station and an associated station for conducting wireless packet communications,

wherein the base station and the associated station have each a plurality of antennas,

wherein the base station comprises:

base station antenna selection means for selecting a packet transmit antenna from among the plurality of antennas;

antenna selection control means for specifying the antenna to be selected by the base station antenna selection means based on quality information of each transmission path established between the plurality of antennas and the antenna selected from among the plurality of antennas of the associated station; and

transmit control means for transmitting a packet to be transmitted to the associated station from the antenna selected by the base station antenna selection means, and

wherein the associated station comprises:

associated station antenna selection means for selecting one antenna from among the plurality of antennas;

receive means for receiving the packet through the antenna selected by the associated station antenna selection means; and

5 antenna switch control means for controlling so as to switch the antenna selected by the associated station antenna selection means to a different antenna in response to receiving the packet by the receive means.

2. The wireless communication system according to claim 1,  
10 wherein the base station comprises transmit power control means for controlling transmit power of the packet based on the quality information.

3. The wireless communication system according to claim 1  
15 or 2,

wherein the associated station comprises:

selection probability storage means for storing the selection probability indicating what probability each of the plurality of antennas is to be selected at;

20 receive quality information storage means for storing receive quality information associating the receive quality of the packet received at the receive means and the antenna receiving the packet with each other; and

25 selection probability update means for updating

the selection probability based on the receive quality information, and

wherein the antenna switch control means determines the different antenna based on the selection probability.

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4. The wireless communication system according to any of claims 1 to 3,

wherein the base station comprises space-time coding means for performing space-time coding of the packet to generate a plurality of coded packets,

10 wherein the base station antenna selection means selects as many antennas as the number responsive to the number of the coded packets,

15 wherein the transmit control means transmits the plurality of coded packets from the selected antennas to the associated station at the same time, and

wherein the associated station comprises combining means for combining the plurality of coded packets received in the receive means.

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5. The wireless communication system according to any of claims 1 to 4,

25 wherein the base station comprises RSSI estimation means for estimating RSSIs of the packets received through the plurality of antennas from the antenna selected by the

associated station antenna selection means, and  
wherein the quality information is the estimated RSSI.

6. The wireless communication system according to any of  
5 claims 1 to 4,

wherein the packet contains a response request packet  
for making a request to send a receive response of the packet  
and a data packet,

wherein at the packet communication start time with the  
10 associated station, the transmit control means transmits the  
response request packet to the associated station from the  
antenna selected by the base station antenna selection means,

wherein the associated station receives the response  
request packet by the receive means and transmits a response  
15 packet of a response to the response request packet to the base  
station from a different antenna to which the antenna is  
switched by the antenna switch control means,

wherein the base station comprises RSSI estimation means  
for estimating RSSIs of the response packets received at the  
20 plurality of antennas,

wherein the quality information is the RSSI, and

wherein the transmit control means transmits the data  
packet to the associated station from the antenna selected by  
the base station antenna selection means according to the  
25 specification based on the quality information.

7. The wireless communication system according to claim 6,  
wherein the data packet contains the response request  
packet.

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8. The wireless communication system according to any of  
claims 1 to 7,  
wherein the plurality of antennas of the base station  
and the associated stations have different characteristics.

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9. A wireless station for conducting wireless packet  
communications with an associated station, the wireless  
station comprising:

a plurality of antennas;

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antenna selection means for selecting a packet transmit  
antenna from among the plurality of antennas;

antenna selection control means for specifying the  
antenna to be selected by the antenna selection means based  
on quality information of each transmission path established  
between the plurality of antennas and the antenna selected from  
among a plurality of antennas of the associated station; and

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transmit control means for transmitting a packet to be  
transmitted to the associated station from the antenna selected  
by the antenna selection means,

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wherein the antenna selected from among the plurality

of antennas of the associated station is switched to a different antenna each time the packet is received in the associated station.

5     10.   The wireless station according to claim 9, comprising:  
          transmit power control means for controlling transmit  
power of the packet based on the quality information.

11.   The wireless station according to claim 9 or 10,  
10   comprising:

          space-time coding means for performing space-time coding  
of the packet to generate a plurality of coded packets,

          wherein the antenna selection means selects as many  
antennas as the number responsive to the number of the coded  
15   packets, and

          wherein the transmit control means transmits the  
plurality of coded packets from the selected antennas to the  
associated station at the same time.

20   12.   The wireless station according to any of claims 9 to 11,  
comprising:

          RSSI estimation means for estimating RSSIs of the packets  
received through the plurality of antennas of the wireless  
station from one antenna selected from among the plurality of  
25   antennas of the associated station,

wherein the quality information is the estimated RSSI.

13. A wireless station for conducting wireless packet communications with an associated station, the wireless station comprising:

a plurality of antennas;

antenna selection means for selecting one antenna from among the plurality of antennas;

receive means for receiving a packet transmitted from a packet transmit antenna selected from among a plurality of antennas of the associated station through the antenna selected by the antenna selection means; and

antenna switch control means for controlling so as to switch the antenna selected by the antenna selection means to a different antenna in response to receiving the packet by the receive means.

14. The wireless station according to claim 13, comprising:

selection probability storage means for storing the selection probability indicating what probability each of the plurality of antennas is to be selected at;

receive quality information storage means for storing receive quality information associating the receive quality of the packet received at the receive means and the antenna receiving the packet with each other; and

selection probability update means for updating the selection probability based on the receive quality information,

wherein the antenna switch control means determines the  
5 different antenna based on the selection probability.

15. The wireless station according to claim 13 or 14,  
wherein the packet transmitted from the associated station is a plurality of coded packets generated by performing  
10 space-time coding of the packet, and

wherein the wireless station comprises combining means for combining the plurality of coded packets received in the receive means.

15 16. The wireless station according to any of claims 9 to 15,  
wherein the plurality of antennas have different characteristics.